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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/990,428	11/21/2001	Noboru Iwata	49443DIV (70904)	4238

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EDWARDS & ANGELL, LLP
P.O. BOX 55874
BOSTON, MA 02205

EXAMINER	
BERNATZ, KEVIN M	

ART UNIT	PAPER NUMBER
1773	

DATE MAILED: 07/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/990,428	IWATA ET AL.	
	Examiner	Art Unit	
	Kevin M Bernatz	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17-25* is/are pending in the application.

4a) Of the above claim(s) *17 and 19* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *18 and 20-25* is/are rejected.

7)☒ Claim(s) *23 and 24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 November 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Amendments to claim 18, filed on April 26, 2004, have been entered in the above-identified application.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Examiner's Comments

3. The Examiner notes that claim 25 refers to the limitation "while at the rear part of the light beam, said first magnetic layer is heated to the vicinity of its compensation temperature and the domain wall does not enter into the light beam". This limitation is slightly confusing because it is unclear if there are two clauses or just one and whether applicants' are attempting to say that no domain walls enter the light beam, which is not enabled by applicants' as-filed disclosure (e.g. Figures clearly show domains within the light beam spot). The Examiner recommends inserting "beyond the light beam rear spot" after "domain wall" in the second to last line. For purposes of evaluating the prior art, the Examiner has interpreted the claim as recommended above, namely that it is the domain wall beyond the light beam rear sport which does not enter into the light beam.

Drawings

4. Figures 8 - 10 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Request for Continued Examination

5. The Request for Continued Examination (RCE) under 37 CFR 1.53 (d) filed on April 26, 2004 is acceptable and a RCE has been established. An action on the RCE follows.

Claim Objections

6. Claim 23 is objected to because of the following informalities: the second magnetic layer only has one Curie temperature, so line 3 should read "at or above its Curie temperature" instead of "at or above a Curie temperature". Appropriate correction is required.

7. Claim 24 is objected to because of the following informalities: the first magnetic layer only has one Curie temperature, so line 3 should read "lower than the Curie

temperature" instead of "lower than a Curie temperature". Appropriate correction is required.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 18 and 20 - 25 are rejected under 35 U.S.C. 102(a) as being anticipated by Aratani (WO99/39342) as evidenced by applicants' admissions. See U.S. Patent No. 6,572,957 B1) which is the U.S. equivalent of WO '342.

Aratani discloses a magneto-optical recording medium comprising at least a first magnetic layer (*Figure 1, layer 11*), a second magnetic layer (*layer 13*) and a third magnetic layer (*layer 14*), which are layered in this order, wherein said first magnetic layer is formed of a perpendicularly magnetized film having a relatively small wall coercivity and a relatively large wall mobility compared with the third magnetic layer in the vicinity of a predetermined temperature (*col. 4, lines 29 – 37; col. 5, lines 27 – 33; col. 6, lines 5 – 14 and Table 1*), and means for irradiating a light beam to a predetermined temperature during reproduction (*Figures*).

The limitation "when a light beam whose intensity is controlled to be a predetermined intensity for reproducing a signal is emitted onto the magneto-optical recording medium while the light beam being moved relatively with respect to the magneto-optical recording medium, said first magnetic layer is composed so as to be characterized as having a larger magnetic wall coercivity at a rear part of the light beam spot than a front part of the light beam spot and so as to restrict movement of a domain wall located beyond the light beam spot rear part" is both a functional and apparatus limitation. I.e. the *product* of the magneto-optical recording medium does not include a light beam, and the light beam is only associated with a recording/reproducing apparatus using the claimed product.

However, the Examiner notes that the above limitation does impart structure to the product, since the product must be capable of meeting the claimed apparatus and functional limitations. In so far as the structure and composition of the *product* is concerned, the above limitation is interpreted as follows: the claimed magneto-optical recording *medium* must possess a first magnetic layer possessing a magnetic wall coercivity which is a function of temperature, as well as domain walls within the magnetic layer. In addition, the *medium* must possess a first magnetic layer wherein, should the *medium* be irradiated with a light beam spot, the wall coercivity would be larger at a rear part of a light beam spot and domain walls located beyond the light beam spot rear part would not enter the light beam rear spot part.

In the instant case, the above claimed limitation(s) are deemed to be an inherent characteristic of the prior art since the prior art is substantially identical in composition

and/or structure. The examiner's sound basis for this assertion is that the prior art product is substantially identical in structure and function and that the wall coercivity, Hw, is a function of temperature (*applicants' specification, pages 5 – 10 – as T increases to the compensation temperature, H_w becomes large*) and at least one "rear part" of the light beam will have a higher temperature than at least one "front part" (*Figure 2*). Furthermore, the Examiner notes that Figure 2 explicitly shows that the domain wall in the rear part of the medium does not enter the light beam (*col. 3, lines 39 –46; col. 7, lines 19 – 27 and 49 – 52; col. 8, lines 9 – 48; and col. 9, lines 6 - 10*).

Regarding the limitation "wherein a composition of the first magnetic layer is adjusted so as to have a compensation temperature of not higher than a Curie temperature", the Examiner notes that the compensation temperature is the temperature where the rare-earth and transition-metal dominance switches and the magnetic layer undergoes a transition from in-plane to perpendicular magnetization (or vis versa). The Examiner notes that the compensation temperature of a magnetic material will *always* be lower than its Curie temperature, since the material becomes non-magnetic at its Curie temperature. Therefore, the above limitations merely requires that the magnetic material exhibits a compensation temperature, which Aratani discloses as acceptable for the first magnetic layers (*col. 5, lines 27 – 36*) as long as the first magnetic layer is perpendicular at the reproducing temperatures.

Regarding the limitation "the magneto-optical recording medium is heated to a vicinity of its compensation temperature with application of the light beam for reproducing a signal", this limitation is an apparatus limitation and is not further limiting

in terms of the structure of the *product* other than requiring that the first magnetic layer possesses a compensation temperature as above.

Regarding claims 20 and 21, Aratani discloses the claimed domain wall movement limitations (*Figure 2*).

Regarding claims 22 and 24, Aratani discloses the claimed property limitations (*col. 3, line 65 bridging col. 4, line 2 and Table 1*).

Regarding claim 23, the Examiner notes that the claimed temperature limitation simply means that the Curie temperature of the second magnetic layer is less than the predetermined temperature during heating, which is taught by Aratani (*Figure 2*).

Regarding claim 25, the claimed limitations are both functional and apparatus limitations. In terms of the structure of the *product* that is required from the claimed limitations, the Examiner deems that the product must have (1) a domain wall which is enlarged in the front part of a light beam spot when the medium is subjected to a light beam moving relative to the medium, (2) a first magnetic layer with a compensation temperature, and (3) a first magnetic layer having a domain wall located outside the light beam rear spot which does not enter the light beam rear spot when the medium is subjected to irradiation while the light beam is moving relative to the medium.

The Examiner notes that Aratani discloses the above three limitations as described above (*Figures and col. 5, lines 27 – 36*).

Claim Rejections - 35 USC § 103

10. Claims 18, 20, 21 and 23 - 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii et al. (U.S. Patent No. 6,249,489 B1) in view of Aratani (WO '342) and as evidenced by applicants' admissions.

Fujii et al. disclose a magneto-optical recording medium comprising at least a first magnetic layer (*Figure 12A, layer 34*), a second magnetic layer (*layer 35*) and a third magnetic layer (*layer 36*), which are layered in this order, wherein said first magnetic layer is formed of a perpendicularly magnetized film having a relatively small wall coercivity and a relatively large wall mobility compared with the third magnetic layer in the vicinity of a predetermined temperature (*col. 15, lines 11 - 19*), and means for irradiating a light beam to a predetermined temperature during reproduction (*Figures*).

The limitation "when a light beam ... light beam spot rear part", the Examiner notes that the above limitation imparts structure to the product as described above. In the instant case, the above claimed limitation(s) are deemed to be an inherent characteristic of the prior art since the prior art is substantially identical in composition and/or structure. The examiner's sound basis for this assertion is that the prior art product is substantially identical in structure and function and that the wall coercivity, Hw, is a function of temperature (*applicants' specification, pages 5 – 10 – as T increases to the compensation temperature, H_w becomes large*) and at least one "rear part" of the light beam will have a higher temperature than at least one "front part" (*Figure 2*). Furthermore, the Examiner notes that Figure 12 explicitly shows that the domain wall in the rear part of the medium does not enter the light beam (*col. 5, line 49*

bridging col. 6, line 8; col. 12, lines 32 – 36; col. 15, line 38 bridging col. 16, line 18; and col. 17, lines 11 - 14).

Regarding the limitation "wherein a composition of the first magnetic layer is adjusted ... reproducing a signal", this limitation merely requires that the first magnetic layer exhibit a compensation temperature.

Fujii et al. fail to teach a first magnetic layer possessing a compensation temperature.

However, Aratani teaches that equivalent functional performance can be obtained using a first magnetic layer which is always a perpendicular magnetic film or a first magnetic film which possesses a compensation temperature, provided it is a perpendicular magnetic film at the reproducing temperature (*col. 5, lines 27 – 36*).

It would, therefore, have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Fujii et al. to use a first magnetic layer possessing a compensation temperature as taught by Aratani since such a structure is a functional equivalent to the Fujii et al. first magnetic layer and substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency. *In re Fount* 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *Graver Tank & Mfg. Co. Inc. v. Linde Air Products Co.* 85 USPQ 328 (USSC 1950).

Regarding claims 20 and 21, Fujii et al. disclose the claimed domain wall movement limitations (*Figure 12*).

Regarding claim 23, the Examiner notes that the claimed temperature limitation simply means that the Curie temperature of the second magnetic layer is less than the predetermined temperature during heating, which is taught by Fujii et al. (*Figure 12*).

Regarding claim 24, Fujii et al. disclose the claimed property limitation (*col. 15, lines 11 - 19*).

Regarding claim 25, the claimed limitations are both functional and apparatus limitations. In terms of the structure of the *product* that is required from the claimed limitations, the Examiner deems that the product must have (1) a domain wall which is enlarged in the front part of a light beam spot when the medium is subjected to a light beam moving relative to the medium, (2) a first magnetic layer with a compensation temperature, and (3) a first magnetic layer having a domain wall located outside the light beam rear spot which does not enter the light beam rear spot when the medium is subjected to irradiation while the light beam is moving relative to the medium.

The Examiner notes that Fujii et al. in view of Aratani discloses the above three limitations as described above (*Figures and Aratani, col. 5, lines 27 – 36*).

Response to Arguments

11. The rejection of claims 18 and 20 - 25 under 35 U.S.C § 102(a) – Aratani

The rejection of claims 18, 20, 21 and 23 - 25 under 35 U.S.C § 103(a) – Fujii et al. in view of Aratani

Applicants request that the Examiner consider the arguments presented in the after final amendment filed December 23, 2003. The Examiner notes that these

arguments have been previously considered and addressed in the advisory action mailed February 20, 2004. If applicants have any specific questions concerning the Examiner's comments, they are invited to contact the Examiner for clarification.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M Bernatz whose telephone number is (571) 272-1505. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (571) 272-1516. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin M. Bernatz, PhD.
Primary Examiner

July 8, 2004